

**CLAIMS**

What is claimed is:

1. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a suspension arrangement that communicates with the base and the platform.
2. The vehicle seat suspension of claim 1 wherein the suspension arrangement is of preassembled and modular construction and is carried by one of the base and the platform.
3. The vehicle seat suspension of claim 2 wherein the suspension arrangement is constructed and arranged to provide height and weight adjustment.
4. The vehicle seat suspension of claim 3 wherein height adjustment is substantially independent of weight adjustment and weight adjustment is substantially independent of height adjustment.
5. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a height and weight adjustment suspension cartridge.
6. The vehicle seat suspension of claim 5 wherein the height and weight adjustment suspension cartridge engages one of the base and platform without any weld.
7. The vehicle seat suspension of claim 5 wherein the height and weight adjustment suspension cartridge is preassembled as a unit before being engaged to one of the base and platform.

8. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a housing that has an elongate end wall that engages one of the base and platform and a pair of spaced apart and generally parallel sidewalls extending outwardly from the end wall.
9. The vehicle seat suspension of claim 8 wherein the suspension arrangement further comprises a damper that is disposed in the housing between the sidewalls and adjacent the end wall.
10. The vehicle seat suspension of claim 8 wherein the suspension arrangement further comprises a movable suspension arm arrangement that is releasably carried by the housing.
11. The vehicle seat suspension of claim 10 wherein each housing sidewall further comprises a plurality of notches that each releasably receive a portion of the movable suspension arm arrangement.
12. The vehicle seat suspension of claim 8 wherein the suspension arrangement further comprises a weight adjust handle and adjuster rod that is carried by an end cap that releasably engages one end of the housing.
13. The vehicle seat suspension of claim 8 wherein the suspension arrangement further comprises a weight adjust handle, a substantially coaxial height adjust handle and an adjuster rod that is carried by an end cap that releasably engages one end of the housing.

14. The vehicle seat suspension of claim 1 wherein the suspension arrangement is carried by one of the base and the platform and further comprising a truncated roller that is in communication with the other one of the base and the platform, wherein the truncated roller has a curvilinear contact portion that rotates during suspension travel and a flat re-indexing portion that reorients the truncated roller when it functions as a contact portion.

15. The vehicle seat suspension of claim 1 wherein the suspension arrangement is carried by one of the base and the platform and further comprising a truncated roller that is in communication with the other one of the base and the platform that rolls back and forth during suspension operation.

16. The vehicle seat suspension of claim 1 wherein the suspension arrangement is carried by one of the base and the platform and further comprising a truncated roller that is in communication with the other one of the base and the platform, wherein the truncated roller has an angular extent of no less than about 30° and no greater than about 270°.

17. The vehicle seat suspension of claim 1 wherein the suspension arrangement is carried by one of the base and the platform and further comprising a roller that is in communication with the other one of the base and the platform, wherein the roller has a curved outer peripheral contour section disposed between pair of flats.

18. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a suspension arm that has an abutment against which a portion of a roller carried by the suspension arm bears against limiting roller rotation during suspension operation.

19. The vehicle seat suspension of claim 18 wherein the abutment comprises a slot and the portion of the roller carried by the suspension arm comprise an outwardly extending boss that is received in the slot.
20. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a suspension arm assembly and a weight adjust assembly that is coupled by a coupling tube and a coupling clip.
21. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a suspension arm assembly that is carried by one of the base and the platform that is in communication with a cam and follower arrangement.
22. The vehicle seat suspension of claim 21 wherein the cam comprises a contoured wedge carried by the other one of the base and the platform and the follower comprises a roller that rides along the contoured wedge during suspension operation.
23. The vehicle seat suspension of claim 22 wherein the contoured wedge comprises a ramp and the roller comprises a circular wheel.
24. The vehicle seat suspension of claim 22 wherein the contoured wedge comprises a ramp and the roller is generally U-shaped.
25. The vehicle seat suspension of claim 1 wherein the suspension arrangement comprises a suspension arm assembly that is pivotally carried by one of the base and the platform and further comprising a cam carried by the other one of the base and the platform that is contoured so as to affect load deflection characteristics of the suspension.

26. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a suspension arrangement that communicates with the base and the platform and which opposes suspension collapse;  
a cam carried by one of the base and the platform that cooperates with the suspension arrangement and affects suspension load deflection characteristics.
27. The vehicle seat suspension of claim 26 wherein the cam comprises a ramp that is fixed to one of the base and the platform.
28. The vehicle seat suspension of claim 26 wherein the cam has a substantially linear profile that produces a substantially linear suspension load deflection curve.
29. The vehicle seat suspension of claim 26 wherein the suspension arrangement comprises a bell crank suspension arrangement carried by the other one of the base and the platform and further comprising a linkage arrangement that includes a scissors linkage arrangement that is disposed between the base and the platform.
30. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a cam carried by one of the base and the platform; and  
a bell crank suspension arrangement carried by the other one of the base and the platform and which has a roller that rides along the cam during suspension operation.
31. The vehicle seat suspension of claim 30 wherein the cam comprises a ramp and the roller comprises a circular wheel.

32. The vehicle seat suspension of claim 30 wherein the foot comprises a truncated roller that has an angular extent of less than  $360^\circ$  and which rolls back and forth during suspension operation.
33. The vehicle seat suspension of claim 30 wherein the roller comprises a roller that has an angular extent of less than  $360^\circ$  and which has a radius of at least 15 mm.
34. The vehicle seat suspension of claim 30 wherein the cam has a substantially linear cam surface that has an angle of inclination of between  $0^\circ$  and  $25^\circ$ .
35. The vehicle seat suspension of claim 30 where the cam has a minimum height at its highest point of at least 5 mm.
36. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a cam carried by one of the base and the platform; and  
a bell crank suspension arrangement carried by the other one of the base and the platform and which has at least one biasing element and a truncated roller that rides along the cam during suspension operation and which rolls in one direction during suspension collapse and rolls in another direction during suspension expansion.
37. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a bell crank suspension arrangement that has at least one biasing element, at least one bell crank arm, a roller carried by the arm, a weight adjust assembly, and a height adjust assembly.

38. The vehicle seat suspension of claim 37 further comprising a damper carried by the bell crank arm.
39. The vehicle seat suspension of claim 37 further comprising a bell crank suspension housing that is fixed to one of the base and the platform and a damper disposed in the bell crank suspension housing that is operably connected to the weight adjust assembly and the height adjust assembly.
40. The vehicle seat suspension of claim 37 wherein the weight adjust assembly is constructed and arranged to enable suspension weight adjustment without affecting height adjustment and the height adjust assembly is constructed and arranged to enable suspension height adjustment without affecting weight adjustment..
41. The vehicle seat suspension of claim 37 wherein the roller comprises a round wheel.
42. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a bell crank suspension arrangement that has at least one biasing element, at least one bell crank arm, a roller carried by the arm, a weight adjust assembly, and a height adjust assembly; and  
wherein the weight adjust assembly is constructed and arranged to enable suspension weight adjustment without affecting suspension height adjustment and the height adjust assembly is constructed and arranged to enable suspension height adjustment without affecting suspension weight adjustment.

43. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a bell crank suspension arrangement that has at least one biasing element, at least one bell crank arm, a roller carried by the arm, a weight adjust assembly, and a height adjust assembly; and

wherein the height adjust assembly has a pair of height adjust limits and is infinitely adjustable between the height adjust limits.

44. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a bell crank suspension arrangement that has at least one biasing element, at least one bell crank arm, a roller carried by the arm, a weight adjust assembly, and a height adjust assembly;

wherein the weight adjust assembly has a pair of weight adjust limits and is infinitely adjustable between the weight adjust limits; and.

wherein the height adjust assembly has a pair of height adjust limits and is infinitely adjustable between the height adjust limits.

45. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a suspension arrangement that communicates with the base and the platform, the suspension arrangement having a pair of generally parallel biasing elements, a suspension housing and a damper disposed between the biasing elements..



46. The vehicle seat suspension of claim 45 wherein the damper is parallel with the biasing elements and the biasing elements and the damper all extend in a fore to aft direction.
47. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a suspension arrangement that communicates with the base and the platform, the suspension arrangement having a pair of generally parallel biasing elements, a suspension housing and a damper disposed in the suspension housing between the biasing elements..
48. A vehicle seat suspension comprising:  
a base;  
a seat supporting platform;  
a preassembled suspension cartridge that is fixable to one of the base and platform.
49. A preassembled suspension cartridge for a vehicle seat suspension comprising:  
a suspension cartridge housing;  
a plurality of biasing elements carried by the suspension cartridge housing; and  
a suspension arm pivotally carried by the suspension cartridge housing.
50. A preassembled suspension cartridge for a vehicle seat suspension comprising:  
a suspension cartridge housing;  
a plurality of biasing elements carried by the suspension cartridge housing;  
a suspension arm pivotally carried by the suspension cartridge housing; and  
a height adjust assembly.

51. A preassembled suspension cartridge for a vehicle seat suspension comprising:
  - a suspension cartridge housing;
  - a plurality of biasing elements carried by the suspension cartridge housing;
  - a suspension arm pivotally carried by the suspension cartridge housing;
  - a weight adjust assembly; and
  - a height adjust assembly.
  
52. A preassembled suspension cartridge for a vehicle seat suspension comprising:
  - a suspension cartridge housing;
  - a plurality of biasing elements carried by the suspension cartridge housing;
  - a suspension arm pivotally carried by the suspension cartridge housing;
  - a damper carried by the suspension cartridge housing in a manner such that the velocity ratio versus suspension deflection is substantially linear throughout the entirety of suspension stroke.
  
53. A preassembled suspension cartridge for a vehicle seat suspension comprising:
  - a suspension cartridge housing;
  - a plurality of biasing elements carried by the suspension cartridge housing;
  - a suspension arm pivotally carried by the suspension cartridge housing;
  - a damper carried by the suspension cartridge housing in a manner such that the velocity ratio versus suspension deflection increases with increasing suspension stroke.